PES= profits equally shared

From farmers to hydroelectric power stations, the number of downstream water users is large and diverse. But the quantity and quality of the water they receive depends on what is done upstream. Upland communities can now get compensation for their role, following business agreements from which everybody benefits.

Text and photo: Julio Tresierra

Better farming practices that bring multiple benefits.

It is widely estimated that, during the last 30 years, the world has lost between 30 and 50 percent of its biodiversity – as a result of urbanisation, industrialisation, or our overall interest in improving living conditions. It is frequently argued that biodiversity cannot compete with the economic value of alternative land uses, such as agriculture or mining, which generate incomes. However, it is also recognised that natural ecosystems produce a wide range of environmental goods and services with an economic value, such as food and non-timber forest products, and others whose value is not always economically recognised, such as carbon sequestration or the regulation of water quality and quantity. Payments for Environmental Services (PES) seek to address this problem. PES schemes are finance mechanisms designed to transfer rewards from those who benefit from environmental services to those who ensure that these benefits continue to be provided. The beneficiaries can include the private sector, such as industries or farmers, or public sector institutions, such as drinking water utilities. For those communities that manage land and other resources,

PES is increasingly seen as a potential source of income to improve their livelihoods.
Since 2006, WWF and CARE have been working on an innovative finance programme called "Equitable payments for watershed services", running pilot projects in Tanzania, Indonesia, Guatemala and Peru. Equitable PES schemes differ from regular PES mechanisms in that they aim to bring substantial benefits to the poor. These can include infrastructure at a community level, such as schools, hospitals and roads, or income generating activities. But the benefits can be much broader, including community empowerment, reduced vulnerability to climate change and more stable social, cultural and environmental conditions. Second, equitable PES schemes aim to make payments to the poor in a just and equitable way. This implies putting the priorities and needs of the poor centre-stage, incorporating local values, knowledge and practices into natural resource management regimes, and ensuring that women and marginalised groups play a central role in the PES schemes. This explicit focus on reducing poverty in rural upland communities involves inviting these and other groups to take a seat at the negotiating table, to discuss with stakeholders downstream the best way to manage a watershed for mutual benefit. A change from subsistence practices towards more sustainable land use could improve the livelihoods of poor upland farmers while, at the same time, protecting the environment and providing a reliable and continuous supply of quality water to users downstream.

A business proposition In the negotiation process, the service providers and users (or the "sellers" and "buyers") establish long-term business agreements. These are based upon baseline studies on hydrology and community livelihoods, as well as legal, institutional and economic analyses. These studies help put a price on the costs and benefits involved. They also help identify potential buyers, such as food or drink processors, hydroelectric companies, associations of water users, or governmental water utilities. Small-scale farmers in upland communities take a seat at the negotiating table, together with downstream commercial, industrial and domestic users. They talk as equal partners and negotiate a Memorandum of Understanding. The negotiation process is to "restore" or improve a watershed system. Signing this Memorandum marks the end of the first phase of the project. The second phase involves implementing the agreed land use changes in selected "hot spots", and the monitoring and evaluation of the impact of these changes. A third phase will start when buyers and sellers of watershed services establish legally binding agreements. By this time, it is expected that there will be sufficient local capacity in place to

Checking erosion in Teculutan

Flowing to Guatemala's southern Atlantic coast, the Motagua and Polochic rivers are part of the larger Mesoamerican Reef Ecosystem river basin. Both run down from the tropical cloud forests within the Sierra de las Minas Biosphere Reserve, one of the most biodiverse regions within Mesoamerica. The reserve is one of the largest unbroken extents of cloud forest, covering around 1,300 km², of which some 65 percent is primary forest. The project focuses on the Teculutan watershed, one of the 63 sub-basins of the Montagua-Polochic complex which covers an area of approximately 200 km².

There are many and diverse water users in this watershed, including coffee processing units, bottling and paper industries, large and small-scale farmers, and also private households, most located in the town of Teculutan. The forest and freshwater habitats in this region have been affected by changing farming practices (steep hills, cattle ranching, and slash and burn) and there is also severe pollution, resulting from the use of chemical pesticides and fertilisers and from domestic and industrial effluents. Deforestation in a hilly area, where rainfall reaches up to 2,000 mm/year, has had an enormous impact on the soil. It is estimated that more than 20 tonnes of soil are lost per year as a result of erosion. Sedimentation, pollution and turbidity mean that there is less water available for human consumption or for industrial and commercial uses. Erosion is also threatening biodiversity in the wider Mesoamerican Reef system. The local municipality recognised that there was a clear problem of water quality as a result of erosion and sedimentation. In addition, changes in land use were leading river flows to change drastically, and increasing the extremes of high runoff levels in winter and low summer flows. As a result, many downstream communities had little water, of poor quality, for much of the year.

The first step in the project was to identify the communities that were contributing most to the problem: El Astillero, Las Anonas, Las Minas, El Arco, San Antonio and El Oreganal. With a total population of 3,000 people, they mostly cultivate maize and beans in the upper parts of the watershed (covering a total of 224 hectares). All the community members belong to the Association

for Community Development (ADICOMTEC) and all were included in the business agreement as "sellers". Being responsible for providing safe water to 18 communities (with approximately 13,000 inhabitants), the Municipality of Teculután was included as the "buyer" in the watershed business model.

The city had two options for solving the water problems it was facing. One was to invest in water treatment plants and distribution systems, and to buy water to supply communities in times of shortage or excessive sedimentation. This was a short-term and unsustainable solution. The second option was to set up a compensation programme for watershed services, to encourage farming and other practices that were compatible with the integrated and sustainable management of the watershed – something that could bring about a medium and long term solution. Arguments were made that changes in the current agro-cultural practices could improve the ground vegetation cover and reduce erosion, and that this would reduce the sedimentary load in the surface water. The municipality opted for this alternative.

As part of the project, ADICOMTEC has set up a tree nursery and is planting out trees over an area of 400 hectares. The nursery has over 75,000 native species plants from the region. The planting programme involves local villagers who have received training in forest management and reforestation. Men and women are participating in the reforestation, even though conditions are harsh (mainly because of the rocky soils and the lack of water sources). Another specific component of the project focuses on agricultural practices and is promoting the production of high-profit crops such as okra, watermelon and oriental vegetables. The municipality has provided 35 hectares of land for these crops, of which 20 are now used for growing okra. Women play an important role in the cultivation of okra and benefit economically from this. Another agricultural experiment is being carried out with different high-yielding maize varieties, applying various cultivation techniques. A small experiment was carried out on two hectares of land, comparing the productivity of these varieties to those commonly sown, and showing that the new ones produced up to seven times more. In total, profits on the 35 hectares were more than US$ 70,000 in 2009. In addition, the promotion of better land use practices has also led to the creation and training of fire control brigades. Although the project is not yet finished, farmers have seen their incomes increase, and the municipality has more and better water.

manage the mechanism, allowing external agents, such as donors, to leave.

An enabling environment

The results of the first phase of the WWF-CARE programme have shown some of the key conditions for equitable PES. There must be:

- a clear willingness (and capacity) to pay and for people to sell ecosystem services;
- well-defined property rights;
- a good understanding of environmental characteristics and linkages;
- the possibility of keeping transaction costs low by concentrating on groups;
- mechanisms for regular and contingent payments;
- appropriate legal frameworks; and
- willingness to talk to each other, engage in dialogue and participate.

The biggest challenge in establishing a Payment for Watershed Services project is that of generating initial interest from a buyer. The emphasis in many PES schemes has often been on seeking the engagement of service providers. But in such cases it is often difficult to convince buyers that the opportunities are ecologically or economically justified. To involve potential buyers, the WWF-CARE project has developed compelling business cases which quantify the problems associated with land use in the upper watershed and provide rigorous financial cost-benefit analyses. The strength of these financial arguments led buyers at all sites to contribute to the development of the project long before, and without any certainties about, the delivery of watershed services started. Another challenge has been ensuring social justice and equity, as poorer households tend to have little or no land and no influence on decision-making at community level. This issue requires continuous attention and identification of special compensatory or enabling measures. Partnering local communities, local and national NGOs, the private sector and governmental agencies offers a key to success.

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More information

Apart from Guatemala, the WWF-CARE project has also had positive results in the Jequetepeque river basin, in northern Peru, and in the Uluguru Mountains, in Tanzania (see www.wwf.nl). Similar approaches are being tried by other organisations. In Kenya, the World Soil Information Centre (ISRIC) and IFAD are collaborating in a green water credits programme, in which farmers in the Upper Tana catchment area are rewarded for sustainable land use by the hydro-electric company KenGen (www.greenwatercredits.info).